



Dkt. 69772-PCT-US/JPW/GJC/CSM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Rina Aharoni et al. Examiner: A. De Cloux  
U.S. Serial No.: 09/768,872 Group Art Unit: 1644  
Filed : January 23, 2001  
For : TREATMENT OF AUTOIMMUNE CONDITIONS WITH  
COPOLYMER 1 RELATED COPOLYMERS AND PEPTIDES.

1185 Avenue of the Americas  
New York, New York 10036  
June 26, 2002

Assistant Commissioner for Patents  
Washington, D.C. 20231

SIR:

**INFORMATION DISCLOSURE STATEMENT  
PURSUANT TO 37 C.F.R. §1.97(b)(3)**

In accordance with their duty of disclosure under 37 C.F.R. §1.56, applicants direct the Examiner's attention to the following Reference Items 1-159 (**Exhibits 1-149**) which are listed again on the accompanying Form PTO-1449 (**Exhibit A**). Applicants request that the Examiner review the references and make them of record in the subject application.

This Information Disclosure Statement is being submitted before the issuance of a first Office Action on the merits in connection with the subject application. Accordingly, no fee is required and this Information Disclosure Statement shall be considered pursuant to 37 C.F.R. §1.97(b)(3).

For the convenience of the Examiner, applicants point out that Reference Item 108 was cited in the October 29, 1999 International Search Report in the corresponding PCT International Application, and a copy of the Report is enclosed as **Exhibit B**.

Applicants also point out that several of the listed references are

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Applicants also point out that several of the listed references are counterparts of each other and are cumulative. Therefore, in accordance with 37 C.F.R. § 1.98(c), a counterpart of a reference is identified after the cite to the reference, but a copy of only one of the counterparts is being provided. Applicants will provide the Examiner with copies of any reference upon request.

1. U.S. Patent No. 3,849,550, issued November 19, 1974 (Teitelbaum, et al.) (**Exhibit 1**);
2. U.S. Patent No. 4,339,431, issued July 13, 1982 (Gaffar) (**Exhibit 2**);
3. U.S. Patent No. 5,204,099, issued April 20, 1993 (Barbier, et al.) (**Exhibit 3**);
4. U.S. Patent No. 5,591,629, issued January 7, 1997 (Rodriguez et al.) (**Exhibit 4**);
5. U.S. Patent No. 5,627,206, issued May 6, 1997 (Hupe, et al.) (**Exhibit 5**);
6. U.S. Patent No. 5,668,117, issued September 16, 1997 (Shapiro et al.) (**Exhibit 6**);
7. U.S. Patent No. 5,719,296, issued February 17, 1998 (Acton, III, et al.) (**Exhibit 7**);
8. U.S. Patent No. 5,800,808, issued September 1, 1998 (Konfino, et al.) (**Exhibit 8**);

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9. U.S. Patent No. 5,858,964, issued January 12, 1999 (Aharoni, et al.) (**Exhibit 9**);
10. U.S. Patent No. 5,981,589, issued November 9, 1999 (Konfino, et al.) (**Exhibit 10**);
11. U.S. Patent No. 5,958,972, issued September 28, 1999 (Hupe, et al.) (**Exhibit 11**);
12. U.S. Patent No. 6,048,898, issued April 11, 2000 (Konfino, et al.) (**Exhibit 12**);
13. U.S. Patent No. 6,054,430, issued April 25, 2000 (Konfino, et al.) (**Exhibit 13**);
14. U.S. Patent No. 6,214,791, issued April 10, 2001 (Arnon, et al.) (**Exhibit 14**);
15. U.S. Patent No. 6,342,476, issued January 29, 2002 (Konfino, et al.) (**Exhibit 15**);
16. U.S. Patent Publication No. US-2001-0055568-A1, published December 27, 2001 (Gilbert et al.) (**Exhibit 16**);
17. U.S. Serial No. 09/359,099, filed July 22, 1999 (Strominger et al.) (**Exhibit 17**);
18. U.S. Serial No. 09/405,743, filed September 24, 1999 (Gad et al.) (**Exhibit 18**);

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19. U.S. Serial No. 09/816,989, filed March 23, 2001 (Gad et al.). Applicants point out that this reference is a counterpart of U.S. Serial No. 09/405,743 (Exhibit 18);
20. U.S. Serial No. 09/875,429, filed June 5, 2001 (Yong and Chabot) (Exhibit 19);
21. U.S. Serial No. 09/885,227, filed June 20, 2001 (Rodriguez and Ure) (Exhibit 20);
22. PCT International Application No. PCT/US88/02139 (WO 88/10120), published December 29, 1988 (Weiner et al.) (Exhibit 21);
23. PCT International Application No. PCT/US95/06551 (WO 95/31990), published November 30, 1995 (Konfino et al.). Applicants point out that this reference is a counterpart of U.S. Patents Nos. 5,800,808 (Exhibit 8) and 6,342,476 (Exhibit 15);
24. PCT International Application No. PCT/EP95/02125 (WO/95/33475), published December 14, 1995 (Kott et al.) (Exhibit 22);
25. PCT International Application No. PCT/US98/00375 (WO 98/30227), published July 16, 1998 (Arnon et al.). Applicants point out that this reference is a counterpart of US Patent No. 6,214,791 (Exhibit 14);
26. PCT International Application No. PCT/US99/16617 (WO 00/05249)

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published February 3, 2000 (Strominger et al). Applicants point out that this reference is a counterpart of U.S. Serial No. 09/359,099 (Exhibit 17);

27. PCT International Application No. PCT/US99/16747 (WO 00/05250) published February 3, 2000 (Aharoni et al.). Applicants point out that this reference is a counterpart of the subject application;
28. PCT International Application No. PCT/US99/22402 (WO 00/18794) published April 6, 2000 (Gad, et al.). Applicants point out that this reference is a counterpart of U.S. Serial No. 09/405,743 (Exhibit 18) and U.S. Serial No. 09/816,989;
29. PCT International Application No. PCT/US99/22836 (WO 00/20010) published April 13, 2000 (Flechter, et al.) (**Exhibit 23**);
30. PCT International Application No. PCT/US99/27107 (WO 00/27417) published May 18, 2000 (Aharoni et al.) (**Exhibit 24**);
31. PCT International Application No. PCT/US01/05198 (WO 01/60392) published August 23, 2001 (Gilbert et al.) Applicants point out that this reference is a counterpart of U.S. Patent Publication No. US-2001-0055568-A1 (Exhibit 16);
32. PCT International Application No. PCT/US01/18248 (WO 01/93828) published December 13, 2001 (Yong and Chabot). Applicants point out that this reference is a counterpart of U.S. Serial No. 09/875,429 (Exhibit 19);
33. PCT International Application No. PCT/US01/19649 (WO 01/97846) published December 27, 2001 (Rodriguez and Ure). Applicants point out that this reference is a counterpart of U.S. Serial

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No. 09/885,227 (Exhibit 20);

34. European Patent Application No. 0 383 620 A2, published August 22, 1990 (Cook) (**Exhibit 25**);
35. European Patent No. 0 359 783 B1, published November 29, 1995 (Werner, et al.);
36. Teitelbaum, et al., "Suppression of Experimental Allergic Encephalomyelitis by a Synthetic Polypeptide", Eur. J. Immunol., 1971, 1, 242-248 (**Exhibit 26**);
37. Teitelbaum, et al., "Suppression of Experimental Allergic Encephalomyelitis by a Synthetic Polypeptide", Israel J. Med. Sci., 1971, 7, 630-631 (Abstract) (**Exhibit 27**);
38. Arnon, et al., "Suppression of Experimental Allergic Encephalomyelitis by a Synthetic Copolymer Immunological Cross Reactive with Basic Encephalitogen", Israel J. Med. Sci., 1972, 8, 1759-1760 (**Exhibit 28**);
39. Teitelbaum, et al., "Protection Against Experimental Allergic Encephalomyelitis", Nature, 1972, 240, 564-566 (**Exhibit 29**);
40. Webb, et al., "Further Studies on the Suppression of Experimental Allergic Encephalomyelitis by Synthetic Copolymer", Israel J. Med. Sci., 1972, 8, 656-657 (**Exhibit 30**);
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44. Teitelbaum, et al., "Suppression of Experimental Allergic Encephalomyelitis in Rhesus Monkeys by a Synthetic Basic Copolymer", Clin. Immunol. Immunopath., 1974, 3, 256-262 (**Exhibit 34**);
45. Webb, et al., "Suppression of Experimental Allergic Encephalomyelitis in Rhesus Monkeys by a Synthetic Basic Copolymer", Isr. J. Med. Sci., 1975, 11, 1388 (Abstract) (**Exhibit 35**);
46. Webb, et al., "Molecular Requirements Involved in Suppression of EAE by Synthetic Basic Copolymers of Amino Acids", Immunochem., 1976, 13, 333-337 (**Exhibit 36**);
47. Abramsky, et al., "Effect of a Synthetic Polypeptide (COP-1) on Patients with Multiple Sclerosis and with Acute Disseminated Encephalomyelitis", J. Neurol. Sci., 1977, 31, 433-438 (**Exhibit 37**);

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49. Arnon, et al., "Suppression of EAE in Baboons by a Synthetic Polymer of Amino Acids", Neurol., 1978, 28, 336 (Abstract) (**Exhibit 39**);
50. Sela, et al., "Experimental Allergic Encephalomyelitis" in Menarini Series on Immunopathology, vol. 1, First Symposium of Organ Specific Autoimmunity", Cremona, Italy, June, 1977, (Miescher P.A. ed., Schwabe Co., Basel, 1978), 9-21 (**Exhibit 40**);
51. Alvord, et al., "Myelin Basic Protein Treatment of Experimental Allergic Encephalomyelitis in Monkeys", Ann. Neurol., 1979, 6, 469-473 (**Exhibit 41**);
52. Keith, et al., "The Effect of COP 1, a Synthetic Polypeptide, on Chronic Relapsing Experimental Allergic Encephalomyelitis in Guinea Pigs" J. Neurol. Sci., 1979, 42, 267-274 (**Exhibit 42**);
53. Lando, et al., "Effect of Cyclophosphamide on Suppressor Cell Activity in Mice Unresponsive to EAE", J. Immunol., 1979, 123, 2156-2160. (Abstract) (**Exhibit 43**);
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57. Arnon, et al., "Desensitization of Experimental Allergic Encephalomyelitis with Synthetic Peptide Analogues" in The Suppression of Experimental Allergic Encephalomyelitis and Multiple Sclerosis (Academic Press, New York, 1980) 105-107 (**Exhibit 47**);
58. Arnon, "A Synthetic Copolymer of Amino Acids in a Clinical Trial for MS Therapy" in Progress in Multiple Sclerosis Research (Bauer, Ritter, eds., Springer Verlag New York, 1980) 416-418 (**Exhibit 48**);
59. Bornstein, et al., "Treatment of Multiple Sclerosis with a Synthetic Polypeptide: Preliminary Results", Ann. Neurol., 1980, 8, 117 (Abstract) (**Exhibit 49**);
60. Bornstein, et al., "Treatment of Multiple Sclerosis with a Synthetic Polypeptide: Preliminary Results", Trans. Am. Neurol. Assoc., 1980, 105, 348-350 (**Exhibit 50**);
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63. Bornstein, et al., "Multiple Sclerosis: Trial of a Synthetic Polypeptide", Ann. Neurol., 1982, 11, 317-319 (**Exhibit 53**);
64. Brosnan, et al., "The Response of Normal Human Lymphocytes to Copolymer 1", J. Neuropath. Exp. Neurol., 1983, 42, 356 (Abstract) (**Exhibit 54**);
65. Lisak, et al., "Effect of Treatment with Copolymer 1 (Cop-1) on the in Vivo and in Vitro Manifestations of Experimental Allergic Encephalomyelitis (EAE)", J. Neurol. Sci., 1983, 62, 281-293 (**Exhibit 55**);
66. Bornstein, et al., "Clinical Trials of Copolymer 1 in Multiple Sclerosis", Ann. N.Y. Acad. Sci. (USA), 1984, 366-372 (**Exhibit 56**);
67. Bornstein, et al., "Clinical Trials of a Synthetic Polypeptide (Copolymer 1) for the Treatment of Multiple Sclerosis" in Gonsett et al., Immunological and Clinical Aspects of Multiple Sclerosis (MTP Press, The Hague, 1984) 144-150 (**Exhibit 57**);
68. Brosnan, et al., "Copolymer 1: Effect on Normal Human Lymphocytes", Ann. N.Y. Acad. Sci. (USA), 1984, 436, 498-499 (**Exhibit 58**);

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70. Brosnan, et al., "Immunogenic Potentials of Copolymer 1 in Normal Human Lymphocytes", Neurol., 1985, 35, 1754-1759 (**Exhibit 60**);
71. Burns, et al., "Human Cellular Immune Response in Vitro to Copolymer 1 and Myelin Basic Protein (MBP)", Neurol., 1985, 35 (Suppl. 1), 170 (Abstract) (**Exhibit 61**);
72. Teitelbaum, et al., "Monoclonal Antibodies to Myelin Basic Protein Cross React with Synthetic EAE-suppressive Copolymer, COP 1" in Proc. 7<sup>th</sup> Eur. Immunol. Mtg., Jerusalem, September 8-13, 1985 (Abstract) (**Exhibit 62**);
73. Thompson, "MCQ Tutor: Medical Immunology Multiple Choice Questions", Immunol. Today, 1985, 6(4), 141 (**Exhibit 63**);
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75. Bornstein, "Cop 1 May be Beneficial for Patients with Exacerbating-remitting Form of Multiple Sclerosis", Adv. Ther. (USA), 1987, 4, 206 (Abstract) (**Exhibit 65**);
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77. Rolak, "Copolymer-I Therapy for Multiple Sclerosis", Clin. Neuropharmacology, 1987, 10(5), 389-396 (**Exhibit 67**);
78. Winer, "COP 1 Therapy for Multiple Sclerosis", New Eng. J. Med., 1987, 317(7), 442-444 (**Exhibit 68**);
79. Arnon, et al., "Suppression of Demyelinating Diseases by Synthetic Copolymers", in A Multidisciplinary Approach to Myelin Disease (G. Serlupi Crescenzi, ed., Plenum Publishing Corp., 1988) 243-250 (**Exhibit 69**);
80. Baumhefner, et al., "Copolymer 1 as Therapy for Multiple Sclerosis: The Cons", Neurol., 1988, 38(Suppl. 2), 69-71 (**Exhibit 70**);
81. Bornstein, et al., "Clinical Experience with COP-1 in Multiple Sclerosis", Neurol., 1988, 38(Suppl. 2), 66-69 (**Exhibit 71**);
82. Teitelbaum, et al., "Specific Inhibition of the T-cell Response to Myelin Basic Protein by the Synthetic Copolymer Cop 1", Proc. Natl. Acad. Sci. USA, 1988, 85, 9724-9728 (**Exhibit 72**);
83. Arnon, et al., "Suppression of Experimental Allergic Encephalomyelitis by Cop-1 - Relevance to Multiple Sclerosis", Israel J. Med. Sci., 1989, 25, 686-689 (**Exhibit 73**);

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85. Teitelbaum, et al., "Clinical Trial of Copolymer 1 in Multiple Sclerosis" J. Israel Med. Assoc., 1989, CXVI(9), 453-456 (**Exhibit 75**);
86. Bornstein, et al., "Clinical Trials of Cop 1 in Multiple Sclerosis" in Handbook of Multiple Sclerosis (S.D. Cook Marcel Rekker, ed., 1990) 469-480 (**Exhibit 76**);
87. Carter, et al., "Newer Drug Therapies for Multiple Sclerosis", Drug Therapy, 1990, 31-32, 37-39, 42-43 (**Exhibit 77**);
88. Grgacic, et al., "Cell-mediated Immune Response to Copolymer 1 in Multiple Sclerosis Measured by the Macrophage Procoagulant Activity Assay", Int. Immunol., 1990, 2(8), 713-718 (**Exhibit 78**);
89. Kay, et al., "The Mechanism of Action of FK 506", Transplantation Proceedings, 1990, 22(1, Suppl. 1), 96-99 (**Exhibit 79**);
90. Lee, et al., "Peptide and Protein Drug Delivery" in Advances in Parenteral Sciences (Vincent H.L. Lee, ed., Marcel Dekker, Inc., 1990) 691-695 (**Exhibit 80**);

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92. Sela, et al., "Suppressive Activity of COP-1 in EAE and its Relevance to Multiple Sclerosis", Bull. Inst. Pasteur, 1990, 88, 303-314 (**Exhibit 82**);
93. Starzl, Transplantation Proceedings, 1990, 22 (1, Suppl. 1), 5 (**Exhibit 83**);
94. Wender, "Copolymer 1 (COP-1) in the Treatment of Multiple Sclerosis (letter)" Neur. Neurochir. Pol., 1990, 24, 113 (**Exhibit 84**);
95. Bornstein, et al., "A Placebo-controlled, Double-blind, Randomized Two-center, Pilot Trial of Cop 1 in Chronic Progressive Multiple Sclerosis", Neurol., 1991, 41, 533-539 (**Exhibit 85**);
96. Burns, et al., "Failure of Copolymer 1 to Inhibit the Human T-cell Response to Myelin Basic Protein", Neurol., 1991, 41, 1317-1319, (**Exhibit 86**);
97. Clinical Trial Protocol No. 9001, Teva Pharmaceutical Industries, Ltd., first patient enrolled October 23, 1991 (**Exhibit 87**);
98. Ferrara, et al., "Graft-Versus-Host Disease", New Eng. J.

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99. Meiner, "COP-1 Multicenter Clinical Trial in Exacerbating-remitting Multiple-Sclerosis: One Year Follow-up", J. Neurol., 1991(Suppl. 1) (Abstract) (Exhibit 89);
100. Rothbard, et al., "Interactions Between Immunogenic Peptides and MHC Proteins", Ann. Rev. Immunol., 1991, 9, 527-565 (Exhibit 90);
101. Salvetti, et al., "Myelin Basic Protein T Cell Epitopes in Patients with Multiple Sclerosis", Department of Neurological Sciences, University of Rome, La Sapienza 1991, 72 (Abstract) (Exhibit 91);
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103. Van den Bogaerde, et al., "Induction of Long-Term Survival of Hamster Heart Xenografts in Rats", Transplantation, 1991, 52, 15-20 (Exhibit 93);
104. Bornstein, et al., "Treatment of Multiple Sclerosis with Copolymer 1" in Treatment of Multiple Sclerosis: Trial Design, Results and Future Perspectives (Rudick R.A. & Goodkin D.E., eds., Springer Verlag, London, 1992) 173-198 (Exhibit 94);
105. Johnson, "Clinical Studies in Copolymer 1 Therapy for Exacerbating-remitting Multiple Sclerosis", in Congress for Advances in the Understanding and Treatment of Multiple

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106. Milo, et al., "Inhibition of Myelin Basic Protein-specific Human T-cell Lines by COP-1", Israel J. Med. Sci., 1992, 28, 486 (Abstract) (**Exhibit 96**);
107. Racke, et al., "Copolymer-1-induced Inhibition of Antigen-specific T Cell Activation: Interference with Antigen Presentation", J. Neuroimmunol., 1992, 37, 75-84 (**Exhibit 97**);
108. Teitelbaum, et al., "Synthetic Copolymer 1 Inhibits Human T-cell Lines Specific for Myelin Basic Protein", Proc. Natl. Acad. Sci. (USA), 1992, 89, 137-141 (**Exhibit 98**);
109. Weinshenker, et al., "Natural History and Treatment of Multiple Sclerosis", Current Opinion in Neurol. and Neurosurgery, 1992, 5, 203-211 (**Exhibit 99**);
110. Aharoni, et al., "T Suppressor Hybridomas and Interleukin-2-Dependent Lines Induced by Copolymer 1 or by Spinal Cord Homogenate Down-Regulate Experimental Allergic Encephalomyelitis", Eur. J. Immunol., 1993, 23, 17-25 (**Exhibit 100**);
111. Arnon, et al., "Immunomodulation of Experimental Allergic Encephalomyelitis", Israel J. Med. Sci., 1993, 29, 175-181 (**Exhibit 101**);
112. Arnon, et al., "On the Existence of Suppressor Cells", Int. Arch. Allergy Immunol., 1993, 100, 2-7 (**Exhibit 102**);



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114. Francis, "The Current Therapy of Multiple Sclerosis", J. Clin. Pharmacy and Therapeutics, 1993, 18, 77-84 (**Exhibit 104**);
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116. Gurevich, "Study of the MHC-competition Between BP and Cop 1 Using Human Cytotoxic T-cell Clones", Israel J. Med. Sci., 1993 (Abstract) (**Exhibit 106**);
117. Meiner, et al., "The Israeli COP-1 Multicenter Clinical Trial in Exacerbating-remitting Multiple Sclerosis - Two-year Follow-up", in 9<sup>th</sup> Congress of the European Committee for Treatment and Research in Multiple Sclerosis, Florence (Italy), October-November, 1993, 48 (Abstract) (**Exhibit 107**);
118. Milo, et al., "Copolymer-1 (COP-1) Regulates Class II MHC Expression and Cytokine Synthesis in the THP-1 Monocyte-Macrophage Cell Line" in The IBC Conference on Multiple Sclerosis, San Diego (USA), December 10, 1993 (Abstract) (**Exhibit 108**);
119. Sela, "Polymeric Drugs as Immunomodulatory Vaccines Against Multiple Sclerosis", Makromol. Chem. Macromol. Symp., 1993, 70/71, 147-155 (**Exhibit 109**);

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121. Bansil, et al., "Multiple Sclerosis: Pathogenesis and Treatment", Seminars in Neurol., June 1994, 14(2), 146-153 (Exhibit 111);
122. The COP-1 Multicenter Clinical and Research Group Study, "COP-1 Multicenter Trial in Relapsing Remitting Multiple Sclerosis: 3 Year Follow Up", Abstracts of Symposia and Free Communication, Barcelona (Spain), June 25-29, 1994, 241 (Suppl. 1), 6 (Exhibit 112);
123. Cotton, "Options for Multiple Sclerosis Therapy", J.A.M.A. Medical News & Perspectives, 1994, 272(18), 1393 (Exhibit 113);
124. Dorling, et al., "Prospects for Xenografting", Curr. Opinions Immunol., 1994, 6, 765-769 (Exhibit 114);
125. Fridkis-Hareli, et al., "Copolymer 1 Displaces MBP, PLP and MOG, but Can Not be Displaced by these Antigens from the MHC Class II Binding Site", Department of Chemical Immunology, The Weizmann Institute of Science, 1994 (Exhibit 115);
126. Fridkis-Hareli, et al., "Direct Binding of Myelin Basic Protein and Synthetic Copolymer 1 to Class II Major Histocompatibility Complex Molecules on Living Antigen-Presenting Cells - Specificity and Promiscuity", Proc. Natl. Acad. Sci. USA, 1994, 91, 4872-4876 (Exhibit 116);
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130. Fridkis-Hareli, et al., "Synthetic Copolymer 1 and Myelin Basic Protein do not Require Processing Prior to Binding to Class II Major Histocompatibility Complex Molecules on Living Antigen Presenting Cells", Department of Chemical Immunology, The Weizmann Institute of Science, Rehovot, Israel, 1994. (Exhibit 120);
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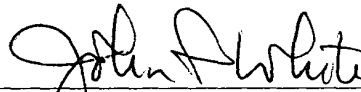
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If a telephone conference would be of assistance in advancing the prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone at the number provided below.

No fee is deemed necessary in connection with the filing of this Information Disclosure Statement. However, if any fee is required, authorization is hereby give to charge the amount of such fee to Deposit Account No. 03-3125.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents Washington, D.C. 20231



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